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10/642,740	08/19/2003	Toshiyuki Kasai	116885	3821

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EXAMINER	
XIAO, KE	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/642,740	KASAI, TOSHIYUKI	
	Examiner	Art Unit	
	Ke Xiao	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,11-21,23-30 and 35-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11-21,23-30 and 35-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-9, 11-21, 23-30 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art (AAPA) in view of Kimura (US 6,362,798).

Regarding independent **Claim 1**, the AAPA teaches an electronic circuit that has:

a reference voltage value Vref, Vref being capable of causing a current Io to flow through a plurality of N current-generating active elements if directly applied to the plurality of N current-generating active elements (AAPA, Fig. 16-17, Vref and Io),

supplies the reference voltage commonly to control terminals of the plurality of N current-generating active elements (AAPA, Fig. 17 element 78),

establishes a conduction state of the plurality of N current-generating active elements (AAPA, Fig. 17 element 78), and

selects, using a plurality of switching transistors, some of the plurality of N current-generating active elements based on signals and generates a current having a current level corresponding to the signals by superposing currents passing through the

current-generating active elements selected by the signal, from among the plurality of N current-generating active elements (AAPA, Fig. 17 element 77 and 79).

The AAPA fails to teach setting a gate voltage of a voltage-rising transistor and changing the reference voltage through a transforming circuit as claimed. Kimura teaches, setting a gate voltage of a voltage-rising transistor included in a transforming circuit to an initial voltage in order to turn on the voltage-rising transistor (Kimura, Fig. 1 element 131 and Vrsig and Fig. 2B resetting period), the transforming circuit changes a reference voltage using the voltage-rising transistor having a threshold voltage Vthc that is substantially identical to Vth (Kimura, Fig. 1 element 120, Col. 10 lines 19-25), the voltage-rising transistor being located in physical proximity to a driving transistor, Vth being a threshold voltage of the driving transistor (Kimura, Col. 10 lines 19-25), the transforming circuit establishing a changed reference voltage (Vref + Vthc) that is capable of causing a current In to flow through the driving transistor (Kimura, Fig. 1 element 120 and Driving Current). It would have been obvious to one of ordinary skill in the art at the time of the invention to add the transforming circuit as taught by Kimura to the Vref of the applicant's admitted prior art in order to stabilize Vref.

Regarding independent **Claim 2**, the AAPA teaches an electronic circuit (AAPA< Fig. 17), comprising:

a plurality of N current-generating active elements (AAPA, Fig. 17 element 78);

a circuit that generating an applied voltage Vref that is commonly applied to control terminals of the plurality of N current-generating active elements, voltage Vref

being capable of causing a current Io to flow through a plurality of N current-generating active elements if directly applied to the plurality of N current-generating active elements (AAPA, Fig. 16 and 17 element 72 and 75), and

selection transistor connected in series to each of the plurality of the N current-generating active elements (AAPA, Fig. 17 element 77),

a current having a current level corresponding to signals being generated by superposing the currents that pass through a selection transistor in which an ON-state is selected, among the selection transistor, based on the signals and the current-generating active elements connected in series to the selected selection transistor from among the plurality of N current-generating active elements (AAPA, Fig. 17 elements 77-79 Im and Io).

The AAPA fails to teach a transforming circuit that changes the reference voltage as claimed. Kimura teaches a transforming circuit which changes a reference voltage using a voltage-rising transistor having a threshold voltage Vthc that is substantially identical to Vth (Kimura, Fig. 1 element 120, Col. 10 lines 19-25), the voltage-rising transistor being located in physical proximity to a driving transistor, Vth being a threshold voltage of the driving transistor (Kimura, Col. 10 lines 19-25), the transforming circuit establishing a changed reference voltage (Vref + Vthc) that is capable of causing a current In to flow through the driving transistor (Kimura, Fig. 1 element 120 and Driving Current), wherein the transforming circuit comprising an initializing device that sets a gate voltage of the voltage-rising transistor included in the

transforming circuit to an initial voltage in order to turn on the voltage-rising transistor (Kimura, Fig. 1 element 131 and Vrsig and Fig. 2B resetting period). It would have been obvious to one of ordinary skill in the art at the time of the invention to add the transforming circuit as taught by Kimura to the Vref of the applicant's admitted prior art in order to stabilize the Vref input signal.

Regarding independent **Claim 13**, the AAPA teaches an electro-optical device, comprising:

a control circuit that outputs digital luminance gradation data (AAPA, Fig. 17 element 17);

a driving circuit that generates an analog driving signal based on digital luminance gradation data (AAPA, Fig. 17); and

a pixel circuit that drives an electro-optical element based on the analog driving signal (AAPA, Pg. 1 paragraph [0002-0003]),

the driving circuit providing a voltage Vref to commonly control terminals of the plurality of current-generating active elements (AAPA, Fig. 16 element 72), Vref being capable of causing a current Io to flow through the plurality of current-generating active elements if directly applied to the plurality of current-generating active elements, and selecting, using a plurality of switching transistors (AAPA, Fig. 17 element 78), some of the plurality of current-generating active elements based on the digital luminance gradation data (AAPA, Fig. 17 element 77), and superposing currents that pass through current generating active elements selected by the digital luminance

gradation data, from among the plurality of current generating active elements, to thereby generate an analog driving signal having a current level corresponding to the digital luminance gradation data (AAPA, Fig. 17 elements 77-79, Im and Io).

The AAPA fails to teach that a driving circuit sets a gate voltage of a voltage-rising transistor and using a threshold voltage of the voltage rising-transistor as claimed. Kimura teaches a driving circuit which sets a gate voltage of a voltage-rising transistor included in a transforming circuit to an initial voltage in order to turn on the voltage-rising transistor (Kimura, Fig. 1 element 120 and Driving Current) and which changes a reference voltage using the threshold voltage Vthc of a voltage-rising transistor having a threshold voltage Vthc that is substantially identical to the threshold voltage Vth of the driving transistor (Kimura, Fig. 1 element 120, Col. 10 lines 19-25), the voltage-rising transistor being located in physical proximity to a driving transistor, the transforming circuit supplying a changed reference voltage (Vref + Vthc) that is capable of causing a current In to flow through the driving transistor (Kimura, Fig. 1 element 120 and Driving Current). It would have been obvious to one of ordinary skill in the art at the time of the invention to add the transforming circuit as taught by Kimura to the Vref of the applicant's admitted prior art in order to stabilize the Vref input signal.

Regarding independent **Claim 14**, the AAPA teaches an electro-optical device, comprising:

a control circuit that outputs digital luminance gradation data (AAPA, Fig. 17 element 79);

a driving circuit that generates an analog driving signal based on digital luminance gradation data (AAPA, Fig. 17); and

a pixel circuit that drives an electro-optical element based on the analog driving signal (AAPA, Pg. 1 paragraph [0002-0003]),

the driving comprising a plurality of current generating active elements (AAPA, Fig. 17 element 78); a circuit that generates a voltage Vref which is commonly applied to control terminals of the plurality of current-generating active elements, Vref being capable of causing a current Io to flow through the plurality of current-generating active elements if directly applied to the plurality of current-generating active elements (AAPA, Fig. 17 elements 80 and 78), and selecting transistors connected in series to each of the plurality of current-generating active elements (AAPA, Fig. 17 elements 77-79); and

a current having a current level corresponding to signals being generated by superposing the currents that pass through a selection transistor in which an ON-state is selected, among the selection transistor, based on the signals and the current-generating active elements connected in series to the selected selection transistor from among the plurality of current-generating active elements (AAPA, Fig. 17 elements 77-79, Im and Io).

The AAPA fails to teach a transforming circuit that generates an applied voltage Vref + Vthc as claimed. Kimura teaches a transforming circuit which generates an applied voltage Vref + Vthc, which is applied to the control terminal of a driving

transistor, using the threshold voltage Vthc of a voltage-rising transistor that is substantially identical to the threshold voltage Vth of the driving transistor (Kimura, Fig. 1 element 120, Col. 10 lines 19-25), the voltage-rising transistor being located in physical proximity to the driving transistor, the transforming circuit supplying a changed reference voltage (Vref + Vthc) that is capable of causing a current In to flow through the driving transistor (Kimura, Fig. 1 element 120 and Driving Current), wherein the transforming circuit comprises an initializing device that sets a gate voltage of the voltage-rising transistor included in the transforming circuit to an initial voltage in order to turn on the voltage-rising transistor (Kimura, Fig. 1 element 120 and Driving Current). It would have been obvious to one of ordinary skill in the art at the time of the invention to add the transforming circuit as taught by Kimura to the Vref of the applicant's admitted prior art in order to stabilize the Vref input signal.

Regarding **Claims 3 and 15**, Kimura further teaches the voltage-rising transistor reducing the reference voltage value by a predetermined value or adding a predetermined value to the reference voltage value (Kimura, Fig. 1 element 120).

Regarding **Claims 4 and 16**, the AAPA further teaches that each of the current-generating active elements includes at least one transistor (AAPA, Fig. 17).

Regarding **Claims 5 and 17**, the AAPA further teaches that the current-generating active elements are connected in parallel to each other (AAPA, Fig. 17).

Regarding **Claims 6 and 18**, the admitted prior art further teaches that each of the current-generating active elements comprise one current generating transistor and

the current generating transistor have different gain factors from each other (AAPA, Fig. 17, Pg. 2 paragraph [0011]).

Regarding **Claims 7 and 19**, the AAPA further teaches at least one current generating active element from among the plurality is connected in series to a unit transistor (AAPA, Fig. 17, Pg. 2 paragraph [0011] Transistor 78a would be considered the unit transistor and transistor 77a would be connected in series with 78a).

Regarding **Claims 8 and 20**, Kimura further teaches that the voltage-rising transistors should have the same characteristics with driving transistors (Kimura, Col. 10 lines 19-25). When the voltage-rising transistor as taught by Kimura is applied to the applicant's admitted prior art as stated above the driving transistor becomes the unit transistor 78a, which means that they have the same characteristics as claimed.

Regarding **Claims 9 and 21**, Kimura further teaches that the voltage-rising transistor is formed next to the driving circuitry as well as having the same threshold voltage values (Kimura, Fig. 1 elements 110 and 120, Col. 10 lines 19-25).

Regarding **Claims 11-12 and 23-24**, the AAPA fails to teach that the transforming circuit further comprises a voltage-stabilizing device, which comprises capacitors. Kimura further teaches a voltage-stabilizing device comprising a capacitor for further stabilizing the voltage for the transforming circuit (Kimura, Fig. 1 element 160). It would have been obvious to one of ordinary skill in the art at the time of the invention to add the capacitor as described by Kimura to the transforming circuit of the AAPA in order to maintain the gate voltage of the voltage-rising transistor. Additionally

a capacitor must be used for each voltage-rising transistor and since there are multiple voltage-rising transistors, one for each data line, there must also be multiple capacitors.

Regarding **Claims 25 and 26**, the AAPA further teaches that the electro-optical element is an electroluminescent element comprising a light-emitting layer made of organic materials (AAPA, Pg. 1 paragraph [0002-0003]).

Regarding **Claims 27 and 28**, the admitted prior art as modified by Kimura further teaches an electronic apparatus packaged with the electronic circuit according to claims 1 and 13 respectively (AAPA, Pg. 1 paragraph [0001-0003]).

Regarding **Claims 29 and 30**, the AAPA further teaches at least one current generating active element of the plurality of current generating active elements has a parallel connection to the unit transistor (AAPA, Fig. 17, Pg. 2 paragraph [0011] Transistor 78a would be considered the unit transistor and the rest of the transistor would therefore be connected in parallel to 78a).

Regarding **Claims 35-38**, Kimura further teaches that the initial voltage being set by connecting the gate of the voltage-rising transistor to an initial set power source via a switch (Kimura, Fig. 1 element 131 and Vrsig and Fig. 2B resetting period).

Response to Arguments

Applicant's arguments filed September 13th, 2007 have been fully considered but they are not persuasive.

Regarding independent **Claims 1, 2, 13 and 14**, the applicant argues that the AAPA in view of Kimura fails to teach that the changed voltage is commonly applied to the control terminals. The examiner respectfully disagrees. The examiner acknowledges the fact that when taken alone the AAPA and Kimura both fail to teach applying a changed reference voltage commonly to the control terminals of a plurality of current generating active elements. However the combination of the two teaches said feature . Specifically, the AAPA clearly teaches that a reference voltage is commonly applied to a plurality of control terminals for a plurality of TFTs. Kimura teaches a compensating transistor which is used to stabilized a reference voltage for a single control terminal. The combination of said compensating transistor and the Vref reads on the claimed invention because the adjusted voltage would then be commonly applied to the control terminal of the TFTs.

Additionally the applicant argues that Kimura fails to teach an initializing device as claimed. The examiner respectfully disagrees. The examiner clearly cites the resetting transistor (Fig. 1 element 130) as the initializing device, which sets a gate voltage of the voltage-rising transistor (Fig. 1 node Vg) included in the transforming circuit to an initial voltage in order to turn on the voltage-rising transistor (Figs. 2A-2B).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ke Xiao whose telephone number is (571) 272-7776. The examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

November 13th, 2007 - kx -

SUMATI LEFKOWITZ
SUPERVISORY PATENT EXAMINER